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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/562,471

11/13/2006

John Graeme Houston

9931-009US

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03/15/2011

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EXAMINER

TANNER, JOCELIN C

ART UNIT

PAPER NUMBER

3731

NOTIFICATION DATE

DELIVERY MODE

03/15/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

international@dblaw.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/562,471	<b>Applicant(s)</b> HOUSTON ET AL.	
	<b>Examiner</b> JOCELIN C. TANNER	<b>Art Unit</b> 3731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6, 29-31, 33-44 and 46-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 29-31, 33-44, 46-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

This Office Action is in response to the Amendment filed 23 December 2010. Claims 1-3, 5, 6, 29-31, 33-44, 46-54 are currently pending. The Examiner acknowledges the amendments to claims 1, 31, 33-35 and 54 and cancelled claims 4, 7-28 and 32.

### *Response to Amendment*

The Amendment to the specification filed 23 December 2010 has been accepted and entered.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1-3, 5, 6, 29-31, 33-44 and 46-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houston et al. (EP 1254645A1) in view of Sano et al. (US Patent No. 6,173,763).**

2. Regarding claims **1, 37 and 54**, Houston et al. discloses an internal formation for a conduit, the formation having a helical-flow inducing means or a "longitudinally extending member" (12) adapted to extend along an inside surface of at least a portion of the length of the conduit, the longitudinally extending member having a first surface that is at least directed towards an inlet or the conduit and a second surface of the member is at least partially directed towards the outlet of the conduit, the first and second surfaces that are coupled together by a third surface or apex therebetween, the

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formation effects spiral flow of a fluid flowing through the conduit (column 1, lines 56-58, column 2, lines 10-12, 15-10, FIG 1). However, Houston et al. fails to disclose a 20° angle of the first surface subtending with a diameter of the conduit extending through a portion of the profile of the longitudinally extending member.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided a 20° angle of the first surface subtending with a diameter, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Houston et al. discloses helical ridging or a “longitudinally extending member” which may be of any cross-sectional shape and size [0009], however, Houston et al. fails to expressly disclose the longitudinally extending member having an asymmetric profile in a direction transverse of the longitudinal axis of the member. It is well known that asymmetric profiles are used within tubes to provide certain flow characteristics. For example, Sano et al. teaches a device formed of a tube that receives fluid flow therethrough. The interior surface of the tube includes spiraled inner fins or a “longitudinally extending member” (7, 9) to control the flow resistances for different flow directions. The longitudinally extending member may be asymmetrical wherein the member includes slope sides (7d, 9d) and straight sides (7e, 93) that meet at an apex in a curved or convex configuration (column 3, lines 60-67, column 8, lines 55-63, Figs. 4, 11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the member of Houston et al., as having an

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asymmetric profile, as taught by Sano et al., to control characteristic of the flow through the device by providing a lower flow resistance and smoother flow in the direction of the sloped sides and higher resistance and chaotic flow in the opposite direction.

**3.** Regarding claim **2**, Houston et al. discloses a longitudinally extending member (12) that extends helically along the length of the conduit (column 2, lines 1-2 and 7-9, FIG. 1).

**4.** Regarding claim **3**, Houston et al. discloses a longitudinally extending member (12) extending helically along the internal side wall of the conduit.

**5.** Regarding claims **5 and 6**, Sano et al. discloses first and second surfaces of the longitudinal member having planar portions and/or a curved portions (9e, 9d) (FIG. 10).

**6.** Regarding claims **29 and 30**, Sano et al. discloses that if a second and or first surface includes a curved portion (9d), the curved portion being concave or convex, or a combination of concave and convex (FIG. 10).

**7.** Regarding claim **31**, the combination of Houston et al. and Sano et al. discloses all of the limitations previously discussed except for a first surface subtending with the diameter of the conduit extending through the portion of the profile of the longitudinally extending member at a smaller angle than the second surface. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided a smaller subtending angle of the first surface, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

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8. Regarding claim **33**, the combination of Houston et al. and Sano et al. discloses all of the limitations previous discussed except for the first surface subtending the diameter of the conduit with an angle between  $5^{\circ}$  and  $15^{\circ}$ . It would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected a subtending angle having a value between  $5^{\circ}$  and  $15^{\circ}$ , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

9. Regarding claim **34**, the combination of Houston et al. and Sano et al. discloses all of the limitations previous discussed except for an angle that the first surface subtends with the diameter of the conduit being substantially  $10^{\circ}$ . It would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected a subtending angle having a value of  $10^{\circ}$ , since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Regarding claim **35**, the combination of Houston et al. and Palmaz et al. discloses all of the limitations previous discussed except for a distance along the internal surface of the conduit from the diameter to the point at which the second surface meets the internal surface of the conduit to be substantially 25% of the internal width of the conduit. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have constructed the distance along the internal surface to the point at which the second surface meets the internal surface to be 25% of

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the internal width, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

11. Regarding claim **36**, Sano et al. discloses first and second surfaces that extend from the internal surface of the conduit towards each other and towards a central longitudinal axis of the conduit (FIG.10).

12. Regarding claim **38**, Sano et al. discloses an internal formation having a third surface formed of an apex coupling the first and second surfaces or a third surface that is curved due to the convex portion of the member (column 3, lines 60-67).

13. Regarding claim **39**, Sano et al. discloses an internal formation having a longitudinally extending member with asymmetric profile and extends along an inside surface of a conduit (Fig. 4).

14. Regarding claim **40**, Houston et al. discloses a conduit that is capable of being used for blood flow (column 7, lines 20-22, FIG. 1).

15. Regarding claim **41**, Houston et al. discloses a tube that is a vascular prosthesis (column 3, lines 12-14).

16. Regarding claim **42**, Houston et al. discloses a vascular prosthesis that is a graft (column 3, line 39-41).

17. Regarding claim **43**, Houston et al. discloses a vascular prosthesis that is a stent (column 3, lines 42-46).

18. Regarding claim **44**, Houston et al. discloses a vascular prosthesis that is a graft/stent combination (column 3, line 39-41).

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19. Regarding claim **46**, Houston et al. discloses a fluid as being a liquid (column 4, lines 27-29).

20. Regarding claim **47**, Houston et al. discloses a conduit having two or more internal formations (FIG. 1).

21. Regarding claim **48**, Houston et al. discloses formations that are in parallel around the conduit (Figs. 2, 4) wherein the formations extend in the same direction and do not intersect.

22. Regarding claim **49**, Houston et al. discloses formations being in series around the circumference of the conduit (FIG. 2).

23. Regarding claim **50**, Houston et al. discloses formations that differ in height and/or the angle of the first and/or second faces by selecting ridges having various shapes or sizes (column 2, lines 3-5).

24. Regarding claim **51 and 52**, Houston et al. discloses formations differing in the angle of first faces and second faces wherein the ridging may taper in the direction of flow or in the opposite direction [0012].

25. Regarding claim **53**, Sano et al. teaches a member that is uniform along its length wherein the cross-sectional configuration does not vary along the length (Fig. 4).

### ***Response to Arguments***

2. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.



***Conclusion***

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOCELIN C. TANNER whose telephone number is (571)270-5202. The examiner can normally be reached on Monday through Thursday between 9am and 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anhtuan Nguyen can be reached on 571-272-4963. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jocelin C. Tanner/  
3/10/2011  
Examiner, Art Unit 3731

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